

10/510,513

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FILE 'HOME' ENTERED AT 13:29:07 ON 16 JUN 2005

=> set plurals on perm  
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=> set abbr on perm  
SET COMMAND COMPLETED

=> file uspatall caplus japio  
COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
0.21	0.21

FULL ESTIMATED COST

FILE 'USPATFULL' ENTERED AT 13:29:34 ON 16 JUN 2005  
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FILE 'USPAT2' ENTERED AT 13:29:34 ON 16 JUN 2005  
CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

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FILE 'JAPIO' ENTERED AT 13:29:34 ON 16 JUN 2005  
COPYRIGHT (C) 2005 Japanese Patent Office (JPO)- JAPIO

=> s (bicyclo(1w)hept? or norbornene) (4a) (exo(2a)endo)  
L1 348 (BICYCLO(1W) HEPT? OR NORBORNENE) (4A) (EXO(2A) ENDO)

=> s l1 and (ring(1w)open? or metathesis) (3a)poly?  
2 FILES SEARCHED...  
L2 62 L1 AND (RING(1W) OPEN? OR METATHESIS) (3A) POLY?

=> s (ring(1w)open? or metathesis) (3a) (bicyclo(1w)hept? or norbornene)  
L3 1613 (RING(1W) OPEN? OR METATHESIS) (3A) (BICYCLO(1W) HEPT? OR NORBORNE  
NE)

=> s l1 and l3  
L4 28 L1 AND L3

=> d l4 1-28 ibib abs

L4 ANSWER 1 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 2004:308148 USPATFULL  
TITLE: NORBORNENE DERIVATIVE AND NORBORNENE POLYMER OBTAINED  
THEREFROM THROUGH RING OPENING POLYMERIZATION  
INVENTOR(S): Miyaki, Nobuyuki, Chiba-ken, JAPAN  
Miyamoto, Yoshikazu, Chiba-ken, JAPAN  
Fukuhara, Seiji, Chiba-ken, JAPAN  
Ootsuki, Toshihiro, Tokyo, JAPAN

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004242824	A1	20041202
	US 6846890	B2	20050125
APPLICATION INFO.:	US 2004-488096	A1	20040308 (10)
	WO 2002-JP10433		20021008

	NUMBER	DATE
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PRIORITY INFORMATION:	JP 2001-313178	20011010
	JP 2002-39120	20020215
	JP 2002-49481	20020226
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., 1940 DUKE STREET, ALEXANDRIA, VA, 22314	
NUMBER OF CLAIMS:	11	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	20 Drawing Page(s)	
LINE COUNT:	1451	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB A novel norbornene derivative represented by a general formula (1m) shown below is provided. By conducting a **ring opening** polymerization of this **norbornene** derivative, or by performing a subsequent hydrogenation following the ring opening polymerization, a ring opening polymer or a hydrogenated product thereof with an excellent low birefringence can be obtained. ##STR1##

[wherein, at least one of R.sup.1 to R.sup.4 is a group selected from the group consisting of groups represented by a general formula (1-1) shown below and groups represented by a general formula (1-2) shown below] ##STR2##

[wherein, at least one of R.sup.A, R.sup.B and Z is a group represented by the formula --C(O)O--].

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 2 OF 28 USPATFULL on STN

ACCESSION NUMBER:	2004:308147 USPATFULL
TITLE:	Thermoplastic norbornene resin based optical film
INVENTOR(S):	Sekiguchi, Masayuki, Chiba-ken, JAPAN Sakakura, Yasuhiro, Ibaraki-ken, JAPAN Shibata, Hiraku, Chiba-ken, JAPAN

	NUMBER	KIND	DATE
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PATENT INFORMATION:	US 2004242823	A1	20041202
APPLICATION INFO.:	US 2004-491433	A1	20040412 (10)
	WO 2002-JP13342		20021220

	NUMBER	DATE
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PRIORITY INFORMATION:	JP 2001-392157	20011225
	JP 2002-45708	20020222
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., 1940 DUKE STREET, ALEXANDRIA, VA, 22314	
NUMBER OF CLAIMS:	13	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Page(s)	
LINE COUNT:	2213	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB An optical film is provided, which displays a positive wavelength dependency across the entire wavelength region from 400 to 800 nm, and is capable of imparting a specified retardation to transmitted light with a single sheet of film. The optical film particularly, includes a thermoplastic norbornene-based resin with a specified structure formed

of a structural unit (I) which imparts a positive birefringence and a structural unit (II) which imparts a negative birefringence, and which satisfies particular conditions with respect to  $\Delta N_{\text{sub.I}}(\lambda)$ ,  $\Delta N_{\text{sub.II}}(\lambda)$ ,  $\Delta N_{\text{sub.I}}(800)$  and  $\Delta N_{\text{sub.II}}(800)$  wherein  $\Delta N_{\text{sub.I}}(\lambda)$  and  $\Delta N_{\text{sub.II}}(\lambda)$  represent the difference between a refractive index  $N_x(\lambda)$  in an x axis direction at a wavelength  $\lambda$ , and a refractive index  $N_y(s)$  in a y axis direction, and  $\Delta N_{\text{sub.I}}(800)$  and  $\Delta N_{\text{sub.II}}(800)$  represent the difference in refractive indexes at a wavelength of 800 nm, and the x axis represents the stretching direction and the y axis represents the in-plane direction perpendicular to the x direction.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 3 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2004:51691 USPATFULL

TITLE: Melt-moldable thermoplastic norbornene resin composition and molded article and optical film both comprising the same

INVENTOR(S): Morita, Takeharu, Osaka, JAPAN  
Hiraike, Hiroshi, Osaka, JAPAN  
Nozato, Shoji, Kyoto, JAPAN

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004039122	A1	20040226
APPLICATION INFO.:	US 2003-381590	A1	20030724 (10)
	WO 2001-JP8625		20011001

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2000-302558	20001002
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP, 1725 K STREET, NW, SUITE 1000, WASHINGTON, DC, 20006	
NUMBER OF CLAIMS:	19	
EXEMPLARY CLAIM:	1	
LINE COUNT:	1267	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A melt-moldable, thermoplastic norbornene resin composition characterized by being obtained by compounding (A) a base polymer comprising a thermoplastic norbornene resin with (B) an olefin compound having a number-average molecular weight of 200 to 10,000 and a softening point of 70 to 170° C.; and a molded article or optical film obtained by melt-molding or extrusion-molding the thermoplastic norbornene resin composition.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 4 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2003:208076 USPATFULL

TITLE: High activity metal carbene metathesis catalysts generated using a thermally activated N-heterocyclic carbene precursor

INVENTOR(S): Bell, Andrew, Lakewood, OH, UNITED STATES  
Grubbs, Robert H., South Pasadena, CA, UNITED STATES  
Morgan, John P., Pasadena, CA, UNITED STATES  
Moore, Jason L., Huntsville, TX, UNITED STATES

NUMBER	KIND	DATE
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PATENT INFORMATION: US 2003144437 A1 20030731  
US 6838489 B2 20050104  
APPLICATION INFO.: US 2002-107531 A1 20020325 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-278311P	20010323 (60)
	US 2001-288680P	20010503 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	PILLSBURY WINTHROP LLP, 2550 Hanover Street, Palo Alto, CA, 94304-1115	
NUMBER OF CLAIMS:	52	
EXEMPLARY CLAIM:	1	
LINE COUNT:	2653	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a method for converting a less active or slower to initiate system to a higher activity system so that at the end of a polymerization the most active species is present in the system. The invention generally relates to a process for converting a less active or slower to initiate catalyst system to a higher activity catalyst system wherein the process comprises contacting a protected N-heterocyclic carbene with a metathesis catalyst and an olefin in the presence of energy. One of the benefits of the invention is that the amount of catalyst required is less than or lowered in the presence of the protected N-heterocyclic carbene as compared to the amount of catalyst required in the absence of the protected N-heterocyclic carbene. The protected N-heterocyclic carbene can be unsaturated or saturated. In addition, the invention describes novel ruthenium initiators and methods of making the same.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 5 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2003:174158 USPATFULL  
TITLE: In mold addition polymerization of norbornene-type monomers using group 10 metal complexes  
INVENTOR(S): Bell, Andrew, Lakewood, OH, UNITED STATES  
Rhodes, Larry F., Silver Lake, OH, UNITED STATES  
Goodall, Brian L., Baton Rouge, LA, UNITED STATES  
Fondran, John C., University Heights, OH, UNITED STATES  
PATENT ASSIGNEE(S): The B.F. Goodrich Company (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003120006	A1	20030626
APPLICATION INFO.:	US 2001-921051	A1	20010802 (9)
RELATED APPLN. INFO.:	Division of Ser. No. US 1999-456780, filed on 8 Dec 1999, GRANTED, Pat. No. US 6350832		

	NUMBER	DATE
PRIORITY INFORMATION:	US 1998-111585P	19981209 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Nestor W. Shust, Hudak & Shunk Co., L.P.A., Suite 808, 7 West Bowery St., Akron, OH, 44308-1138	
NUMBER OF CLAIMS:	77	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Page(s)	
LINE COUNT:	6882	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A catalyst system and a process for the bulk addition polymerization or

of polycyclic olefins, such as norbornene, methylnorbornene, ethylnorbornene, butylnorbornene or hexylnorbornene, 1,2,3,4,4a,5,8,8a-octahydro-1,4:5,8-dimethanonaphthalene, 5,5'-(1,2-ethanediyl)bisbicyclo[2.2.1]hept-2-ene, and 1,4,4a,4b,5,8,8a,8b-octahydro-1,4:5,8-dimethanobiphenylene are disclosed. The catalyst includes an organonickel or organopalladium transition metal procatalyst and an activator compound. Polymerization can be carried out in a reaction injection molding process to yield thermoplastic and thermoset molded polymeric articles possessing high glass transition temperatures.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 6 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2003:120961 USPATFULL

TITLE: High activity metal carbene metathesis catalysts generated using a thermally activated N-heterocyclic carbene precursor

INVENTOR(S): Grubbs, Robert H., South Pasadena, CA, UNITED STATES  
Moore, Jason L., Huntsville, TX, UNITED STATES  
Morgan, John P., Pasadena, CA, UNITED STATES  
Bell, Andrew, Lakewood, OH, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003083445	A1	20030501
APPLICATION INFO.:	US 2002-138188	A1	20020503 (10)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 2002-107531, filed on 25 Mar 2002, PENDING		

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-278311P	20010323 (60)
	US 2001-288680P	20010503 (60)
	US 2002-360775P	20020301 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	PILLSBURY WINTHROP LLP, 2550 HANOVER STREET, PALO ALTO, CA, 94304	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
LINE COUNT:	2461	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a method for converting a less active or slower to initiate system to a higher activity system so that at the end of a polymerization the most active species is present in the system. The invention generally relates to a process for converting a less active or slower to initiate catalyst system to a higher activity catalyst system wherein the process comprises contacting a protected N-heterocyclic carbene with a metathesis catalyst and an olefin in the presence of energy. One of the benefits of the invention is that the amount of catalyst required is less than or lowered in the presence of the protected N-heterocyclic carbene as compared to the amount of catalyst required in the absence of the protected N-heterocyclic carbene. The protected N-heterocyclic carbene can be unsaturated or saturated. In addition, the invention describes novel ruthenium initiators and methods of making the same.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 7 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2003:53862 USPATFULL

TITLE: Norbornene polymer and production process

INVENTOR(S) : Tanahashi, Naoki, Kanagawa, JAPAN  
Ito, Hidehiro, Kanagawa, JAPAN  
Murakami, Toshihide, Kanagawa, JAPAN  
PATENT ASSIGNEE(S) : Nippon Zeon Co., Ltd., Tokyo, JAPAN (non-U.S.  
corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6525144	B1	20030225
	WO 9909085		19990225
APPLICATION INFO.:	US 2000-485899		20000505 (9)
	WO 1998-JP3877		19980819

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1997-237649	19970819
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Lipman, Bernard	
LEGAL REPRESENTATIVE:	Dinsmore & Shohl LLP	
NUMBER OF CLAIMS:	31	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	1 Drawing Figure(s); 1 Drawing Page(s)	
LINE COUNT:	2078	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A norbornene polymer comprising a repeating unit derived from a norbornene monomer having a cyclic hydrocarbon structure (I) derived from the norbornene ring which constitutes at least a part of the main chain, another cyclic hydrocarbon structure (II), which shares one carbon-carbon bond with the cyclic hydrocarbon structure (I) and has 4 to 6 carbon atoms, and a monocyclic or polycyclic hydrocarbon structure (III), which shares one carbon-carbon bond with the cyclic hydrocarbon structure (II), in a proportion of 20 to 100 mol % based on the whole repeating unit of the polymer, wherein the number average molecular weight is within a range of 1,000 to 1,000,000, and a peak area (A) on a high magnetic field side and a peak area (B) on a low magnetic field side in methylene peaks derived from the methylene groups in the cyclic hydrocarbon structure (III) in a <sup>13</sup>C-NMR spectrum as determined in heavy chloroform (TMS standard) satisfy a relationship of the expression:

$$B/(A+B) \leq 0.30$$

and a production process thereof.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 8 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 2002:344691 USPATFULL  
TITLE: Selective ring-opening cross-metathesis of cycloolefins  
INVENTOR(S) : Morgan, John P., South Pasadena, CA, UNITED STATES  
Morrill, Christie, Pasadena, CA, UNITED STATES  
Grubbs, Robert H., South Pasadena, CA, UNITED STATES  
Choi, Tae-Lim, Pasadena, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002198426	A1	20021226
	US 6803429	B2	20041012
APPLICATION INFO.:	US 2002-114674	A1	20020401 (10)

NUMBER	DATE
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PRIORITY INFORMATION: US 2001-280601P 20010330 (60)  
DOCUMENT TYPE: Utility  
FILE SEGMENT: APPLICATION  
LEGAL REPRESENTATIVE: REED & ASSOCIATES, 800 MENLO AVENUE, SUITE 210, MENLO  
PARK, CA, 94025  
NUMBER OF CLAIMS: 41  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 2 Drawing Page(s)  
LINE COUNT: 1959

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A catalytic method is provided for a ring-opening cross-metathesis reaction between a cycloolefinic substrate and a second olefinic reactant, wherein the catalyst used is a transition metal alkylidene complex substituted with an N-heterocyclic carbene ligand. The substrates are selected so that the rate of the cross-metathesis reaction of the second olefinic reactant, k.sub.CM, is greater than or equal to the rate of the ring-opening metathesis reaction, k.sub.RO. In this way, the predominant ROCM product is a monomer, dimer, and/or oligomer, but not a polymer. The invention additionally provides for selective production of an end-differentiated olefinic product, using trisubstituted cycloolefins as substrates and/or a subsequent cross-metathesis reaction following an initial ROCM step. The cycloolefinic substrates include low-strain olefins such as cyclohexene as well as higher strain olefins such as cyclooctene.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 9 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2002:40000 USPATFULL  
TITLE: Mold addition polymerization of norbornene-type monomers using group 10 metal complexes  
INVENTOR(S): Bell, Andrew, Lakewood, OH, United States  
Rhodes, Larry F., Silver Lake, OH, United States  
Goodall, Brian L., Baton Rouge, LA, United States  
Fondran, John C., University Heights, OH, United States  
PATENT ASSIGNEE(S): The B. F. Goodrich Company, Charlotte, NC, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6350832	B1	20020226
APPLICATION INFO.:	US 1999-456780		19991208 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 1998-111585P	19981209 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Wu, David W.	
ASSISTANT EXAMINER:	Rabago, R.	
LEGAL REPRESENTATIVE:	Dunlap, Thoburn T., Hudak & Shunk Co., LPA	
NUMBER OF CLAIMS:	31	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Figure(s); 2 Drawing Page(s)	
LINE COUNT:	6505	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A catalyst system and a process for the bulk addition polymerization or of polycyclic olefins, such as norbornene, methylnorbornene, ethylnorbornene, butylnorbornene or hexylnorbornene, 1,2,3,4,4a,5,8,8a-octahydro-1,4:5,8-dimethanonaphthalene, 5,5'-(1,2-ethanediyl)biscyclo[2.2.1]hept-2-ene, and 1,4,4a,4b,5,8,8a,8b-octahydro-1,4:5,8-dimethanobiphenylene are disclosed. The catalyst includes an organonickel or organopalladium

transition metal procatalyst and an activator compound. Polymerization can be carried out in a reaction injection molding process to yield thermoplastic and thermoset molded polymeric articles possessing high glass transition temperatures.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 10 OF 28 USPATFULL on STN

ACCESSION NUMBER: 2001:163370 USPATFULL

TITLE: Method for preparing norbornene and substituted derivatives of norbornene

INVENTOR(S): Bergstrom, Christer, Espoo, Finland  
Koskinen, Jukka, Espoo, Finland  
Halme, Erkki, Helsinki, Finland  
Lindstrom, Matti, Lappeenranta, Finland  
Perala, Mika, Lappeenranta, Finland

PATENT ASSIGNEE(S): Opatatech Corporation, Espoo, Finland (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6294706	B1	20010925
	WO 9733848		19970918
APPLICATION INFO.:	US 1998-142806		19981029 (9)
	WO 1997-FI169		19970313
			19981029 PCT 371 date
			19981029 PCT 102(e) date

	NUMBER	DATE
PRIORITY INFORMATION:	FI 1996-1184	19960313
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Teskin, Fred	
LEGAL REPRESENTATIVE:	Cohen, Pontani, Lieberman & Pavane	
NUMBER OF CLAIMS:	19	
EXEMPLARY CLAIM:	1	
LINE COUNT:	561	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed is a method for the preparation of norbornene and substituted norbornene compounds via a Diels-Alder reaction, in which a cyclic diene is reacted with an olefinic compound in order to prepare a norbornene compound. According to the invention a cyclic diene is gradually added to react with an olefinic compound, in order to keep the concentration of the cyclic diene in the reaction mixture as low as possible during the reaction. It is possible to obtain a very pure product, high yield, short reaction time and high concentrations of the exo diastereomer with the method of the invention.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 11 OF 28 USPATFULL on STN

ACCESSION NUMBER: 1998:147533 USPATFULL

TITLE: Olefin metathesis reactions in carbon dioxide medium

INVENTOR(S): DeSimone, Joseph M., Chapel Hill, NC, United States  
Mistele, Chad D., Carrboro, NC, United States

PATENT ASSIGNEE(S): The University of North Carolina at Chapel Hill, Chapel Hill, NC, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5840820		19981124
APPLICATION INFO.:	US 1995-469480		19950606 (8)



RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1995-423501, filed on 13 Apr 1995, now abandoned  
DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Zitomer, Fred  
LEGAL REPRESENTATIVE: Bell, Seltzer, Park & Gibson  
NUMBER OF CLAIMS: 20  
EXEMPLARY CLAIM: 1  
LINE COUNT: 839

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides a process for olefin metathesis. The process comprises (a) providing a reaction mixture comprising an olefin, a metathesis initiator, and a reaction medium comprising carbon dioxide, and (b) reacting the reaction mixture to provide a metathesis modified olefin. The olefin metathesis reaction may be an olefin metathesis exchange reaction, an olefin metathesis degradation reaction, or a metathesis polymerization reaction. The carbon dioxide medium may be liquid, supercritical, and gaseous carbon dioxide.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 12 OF 28 USPATFULL on STN

ACCESSION NUMBER: 1998:82843 USPATFULL

TITLE: Supersatmospheric reaction

INVENTOR(S): Clough, Robert S., Oakdale, MN, United States

Senger, Cheryl L., Woodbury, MN, United States

Gozum, John E., Maplewood, MN, United States

PATENT ASSIGNEE(S): Minnesota Mining and Manufacturing Company, St. Paul, MN, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5780565		19980714
	WO 9601851		19960125
APPLICATION INFO.:	US 1995-553286		19951128 (8)
	WO 1995-US8559		19950707
			19951128 PCT 371 date
			19951128 PCT 102(e) date

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1994-272779, filed on 8 Jul 1994, now abandoned

DOCUMENT TYPE: Utility

FILE SEGMENT: Granted

PRIMARY EXAMINER: Schofer, Joseph L.

ASSISTANT EXAMINER: Sarofim, N.

LEGAL REPRESENTATIVE: Burleson, David G., Little, Douglas B., Tamte, Roger R.

NUMBER OF CLAIMS: 22

EXEMPLARY CLAIM: 1

LINE COUNT: 1327

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A polymerization process produces polymers that are insoluble in a reaction mixture that was homogeneous before the polymer began to form. A dispersing agent in the polymerizing system (i.e., the reaction mixture plus the dispersing agent) allows a kinetically stable dispersion of the polymer to be formed in this polymerizing system. The polymerization process is performed in a fluid held under superatmospheric conditions such that the fluid is a liquid or a supercritical fluid; the fluid being carbon dioxide, a hydrofluorocarbon, a perfluorocarbon, or a mixture of any of the foregoing.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 13 OF 28 USPATFULL on STN

ACCESSION NUMBER: 97:94336 USPATFULL

TITLE: Homopolymers and copolymers of cationically polymerizable monomers and method of their preparation  
 INVENTOR(S): Goodall, Brian Leslie, Akron, OH, United States  
 McIntosh, III, Lester Howard, Cuyahoga Falls, OH, United States  
 Barnes, Dennis Allen, Medina, OH, United States  
 PATENT ASSIGNEE(S): The B.F. Goodrich Company, Richfield, OH, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5677405		19971014
APPLICATION INFO.:	US 1995-448961		19950524 (8)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Nagumo, Mark		
LEGAL REPRESENTATIVE:	Shust, Nestor W., Dunlap, Thoburn T.		
NUMBER OF CLAIMS:	15		
EXEMPLARY CLAIM:	1,2,15		
LINE COUNT:	2592		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention discloses methods of preparing copolymers from norbornene-type monomers and cationically polymerizable monomers or polymers from catalytically polymerizable monomers by employing Group VIII transition metal ion source in a solvent for said monomers at a temperature in the range from -100° C. to 120° C. Also disclosed are copolymers from norbornene-type monomers and catalytically polymerizable monomers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 14 OF 28 USPATFULL on STN  
 ACCESSION NUMBER: 97:52145 USPATFULL  
 TITLE: Thermally activated olefin metathesis catalyst precursor  
 INVENTOR(S): Bell, Andrew, West Grove, PA, United States  
 Coffy, Tim Joseph, Houston, TX, United States  
 PATENT ASSIGNEE(S): Metton America, Inc., Abingdon, VA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5639900		19970617
APPLICATION INFO.:	US 1993-175328		19931229 (8)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Nazario-Gonzales, Porfirio		
LEGAL REPRESENTATIVE:	Fitzpatrick, Cella, Harper & Scinto		
NUMBER OF CLAIMS:	36		
EXEMPLARY CLAIM:	1,4		
LINE COUNT:	1589		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Molybdenum and tungsten compounds that are useful as catalyst precursors in the metathesis of olefins have the general formula:

$$M(Y) (OR.sup.2) .sub.x (R.sup.3) .sub.y (X) .sub.z L.sub.s$$

wherein M is tungsten or molybdenum; Y is oxygen or NR<sup>1</sup>; R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are the same or different and are selected from alkyl, cycloalkyl, cycloalkenyl, polycycloalkyl, polycycloalkenyl, haloalkyl, haloaralkyl, substituted or unsubstituted aralkyl and aryl groups, and silicon-containing analogs thereof; L is a Lewis base; X is halogen; s is 0 or 1; x+y+z=4, and y≥1, provided that when x is 2

or more, two OR.sup.2 groups can be replaced by a chelating ligand (OR.sup.2).sub.2.

These compounds can be used for the metathesis of olefins in neat metathesizable olefin, as well as in solution, and require only the input of energy to be converted to active catalysts.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 15 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 97:16235 USPATFULL  
TITLE: Thermally activated olefin metathesis catalyst precursor  
INVENTOR(S): Bell, Andrew, West Grove, PA, United States  
Coffy, Tim J., Houston, TX, United States  
PATENT ASSIGNEE(S): Metton America, Inc., Abingdon, VA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5606085		19970225
APPLICATION INFO.:	US 1995-538990		19951005 (8)
RELATED APPLN. INFO.:	Division of Ser. No. US 1993-175328, filed on 29 Dec 1993, now patented, Pat. No. US 5502228		
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Nazario-Gonzalez, Porfirio		
LEGAL REPRESENTATIVE:	Fitzpatrick, Cella, Harper & Scinto		
NUMBER OF CLAIMS:	34		
EXEMPLARY CLAIM:	1,27,31		
LINE COUNT:	1600		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Molybdenum and tungsten compounds that are useful as catalyst precursors in the metathesis of olefins have the general formula:

M(Y)(OR.sup.2).sub.x (R.sup.3).sub.y (X).sub.z L.sub.s

wherein M is tungsten or molybdenum; Y is oxygen or NR.sup.1 ; R.sup.1, R.sup.2, and R.sup.3 are the same or different and are selected from alkyl, cycloalkyl, cycloalkenyl, polycycloalkyl, polycycloalkenyl, haloalkyl, haloaralkyl, substituted or unsubstituted aralkyl and aryl groups, and silicon-containing analogs thereof; L is a Lewis base; X is halogen; s is 0 or 1; x+y+z=4, and y≥1, provided that when x is 2 or more, two OR.sup.2 groups can be replaced by a chelating ligand (OR.sup.2).sub.2.

These compounds can be used for the metathesis of olefins in neat metathesizable olefin, as well as in solution, and require only the input of energy to be converted to active catalysts.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 16 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 96:25115 USPATFULL  
TITLE: Thermally activated olefin metathesis catalyst precursor  
INVENTOR(S): Bell, Andrew, West Grove, PA, United States  
Coffy, Tim J., Houston, TX, United States  
PATENT ASSIGNEE(S): Metton America, Inc., Abingdon, VA, United States (U.S. corporation)

NUMBER	KIND	DATE
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PATENT INFORMATION: US 5502228 19960326  
APPLICATION INFO.: US 1993-175328 19931229 (8)  
DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Nazario-Gonzales, Porfirio  
LEGAL REPRESENTATIVE: Fitzpatrick, Cella, Harper & Scinto  
NUMBER OF CLAIMS: 13  
EXEMPLARY CLAIM: 1,4  
LINE COUNT: 1498

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Molybdenum and tungsten compounds that are useful as catalyst precursors in the metathesis of olefins have the general formula:

$M(Y)(OR)^{sup.2}.sub.x(R)^{sup.3}.sub.y(X)^{sub.z}L^{sub.s}$

wherein M is tungsten or molybdenum; Y is oxygen or  $NR^{sup.1}$ ;  $R^{sup.1}$ ,  $R^{sup.2}$ , and  $R^{sup.3}$  are the same or different and are selected from alkyl, cycloalkyl, cycloalkenyl, polycycloalkyl, polycycloalkenyl, haloalkyl, haloaralkyl, substituted or unsubstituted aralkyl and aryl groups, and silicon-containing analogs thereof; L is a Lewis base; X is halogen; s is 0 or 1;  $x+y+z=4$ , and  $y \geq 1$ , provided that when x is 2 or more, two  $OR^{sup.2}$  groups can be replaced by a chelating ligand  $(OR)^{sup.2}.sub.2$ .

These compounds can be used for the metathesis of olefins in neat metathesizable olefin, as well as in solution, and require only the input of energy to be converted to active catalysts.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 17 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 93:48625 USPATFULL  
TITLE: Norbornene dicarboximide polymers  
INVENTOR(S): Asrar, Jawed, Wilbraham, MA, United States  
PATENT ASSIGNEE(S): Monsanto Company, St. Louis, MO, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5219966		19930615
APPLICATION INFO.:	US 1991-706480		19910528 (7)
RELATED APPLN. INFO.:	Division of Ser. No. US 1988-196992, filed on 20 May 1988, now abandoned		
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Schofer, Joseph L.		
ASSISTANT EXAMINER:	Cheng, Wu C.		
LEGAL REPRESENTATIVE:	Kelley, Thomas E., Shear, Richard H.		
NUMBER OF CLAIMS:	2		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	1 Drawing Figure(s); 1 Drawing Page(s)		
LINE COUNT:	382		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Polymerization of N-methyl norbornene dicarboximide yields polymers of high Tg, e.g. greater than 200° C. Preferred polymers of exo N-methyl norbornene dicarboximide have number average molecular weight of at least 8,000.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 18 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 90:81857 USPATFULL  
TITLE: Norbornene dicarboximide polymer

INVENTOR(S): Asrar, Jawed, Wilbraham, MA, United States  
PATENT ASSIGNEE(S): Monsanto Company, St. Louis, MO, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 4965330		19901023
APPLICATION INFO.:	US 1988-256212		19881007 (7)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1987-67562, filed on 26 Jun 1987, now abandoned		
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	Anderson, Harold D.		
LEGAL REPRESENTATIVE:	Kelley, Thomas E., Shear, Richard H.		
NUMBER OF CLAIMS:	3		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	1 Drawing Figure(s); 1 Drawing Page(s)		
LINE COUNT:	473		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Polymerization of norbornene dicarboximide yields polymers of high Tg, e.g. greater than 170° C. Preferred polymers of N-phenyl norbornene dicarboximide exhibit Tg greater than 210°C.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 19 OF 28 USPATFULL on STN  
ACCESSION NUMBER: 77:24056 USPATFULL  
TITLE: Novel polymer containing cyclopentanylvinylenes units  
INVENTOR(S): Kurosawa, Shigeru, Yokohama, Japan  
Ueshima, Takashi, Yokohama, Japan  
Tanaka, Yasuzi, Kawasaki, Japan  
Kobayashi, Shoichi, Yokohama, Japan  
PATENT ASSIGNEE(S): Showa Denko Kabushiki Kaisha, Japan (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 4022954		19770510
APPLICATION INFO.:	US 1975-592320		19750701 (5)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1974-75903	19740704
	JP 1974-85072	19740726
	JP 1974-104849	19740913
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	Granted	
PRIMARY EXAMINER:	Levin, Stanford M.	
LEGAL REPRESENTATIVE:	Wenderoth, Lind & Ponack	
NUMBER OF CLAIMS:	13	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	9 Drawing Figure(s); 9 Drawing Page(s)	
LINE COUNT:	2324	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Processes for preparing novel polymers containing carboxyl or carboxylate groups which comprises hydrolyzing starting polymers containing acid anhydride groups in the presence of acids or alkalis, the starting polymers being prepared by ring-opening polymerization of acid anhydride-type norbornene derivatives, and the characteristics and utility of these novel polymers are disclosed.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 20 OF 28 USPAT2 on STN

ACCESSION NUMBER: 2004:308148 USPAT2  
TITLE: Norbornene derivative and norbornene polymer obtained therefrom through ring opening polymerization  
INVENTOR(S): Miyaki, Nobuyuki, Chiba-ken, JAPAN  
Miyamoto, Yoshikazu, Chiba-ken, JAPAN  
Fukuhara, Seiji, Chiba-ken, JAPAN  
Ootsuki, Toshihiro, Chiba-ken, JAPAN  
PATENT ASSIGNEE(S): JSR Corporation, Tokyo, JAPAN (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6846890	B2	20050125
	WO 2003003345		20030424
APPLICATION INFO.:	US 2004-488096		20040308 (10)
	WO 2002-JP10433		20021008
			20040308 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-313178	20011010
	JP 2002-39120	20020215
	JP 2002-49481	20020226
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Teskin, Fred	
LEGAL REPRESENTATIVE:	Oblon, Spivak, McClelland, Maier & Neustadt, P.C.	
NUMBER OF CLAIMS:	11	
EXEMPLARY CLAIM:	1,5	
NUMBER OF DRAWINGS:	20 Drawing Figure(s); 20 Drawing Page(s)	
LINE COUNT:	1423	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A novel norbornene derivative represented by a general formula (1m) shown below is provided. By conducting a **ring opening** polymerization of this **norbornene** derivative, or by performing a subsequent hydrogenation following the ring opening polymerization, a ring opening polymer or a hydrogenated product thereof with an excellent low birefringence can be obtained. ##STR1##

[wherein, at least one of R.sup.1 to R.sup.4 is a group selected from the group consisting of groups represented by a general formula (1-1) shown below and groups represented by a general formula (1-2) shown below] ##STR2##

[wherein, at least one of R.sup.A, R.sup.B and Z is a group represented by the formula --C(O)O--].

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 21 OF 28 USPAT2 on STN

ACCESSION NUMBER: 2003:208076 USPAT2  
TITLE: High activity metal carbene metathesis catalysts generated using a thermally activated N-heterocyclic carbene precursor  
INVENTOR(S): Bell, Andrew, Lakewood, OH, United States  
Grubbs, Robert H., South Pasadena, CA, United States  
Morgan, John P, Pasadena, CA, United States  
Moore, Jason L., Huntsville, TX, United States  
PATENT ASSIGNEE(S): Cymetech, LLC, Huntsville, TX, United States (U.S. corporation)  
California Institute of Technology, Pasadena, CA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6838489	B2	20050104
APPLICATION INFO.:	US 2002-107531		20020325 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-288680P	20010503 (60)
	US 2001-278311P	20010323 (60)
	US 2002-360775P	20020301 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Harlan, Robert D.	
LEGAL REPRESENTATIVE:	Jaffer, David, Pillsbury Winthrop LLP	
NUMBER OF CLAIMS:	28	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	0 Drawing Figure(s); 0 Drawing Page(s)	
LINE COUNT:	2520	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a method for converting a less active or slower to initiate system to a higher activity system so that at the end of a polymerization the most active species is present in the system. The invention generally relates to a process for converting a less active or slower to initiate catalyst system to a higher activity catalyst system wherein the process comprises contacting a protected N-heterocyclic carbene with a metathesis catalyst and an olefin in the presence of energy. One of the benefits of the invention is that the amount of catalyst required is less than or lowered in the presence of the protected N-heterocyclic carbene as compared to the amount of catalyst required in the absence of the protected N-heterocyclic carbene. The protected N-heterocyclic carbene can be unsaturated or saturated. In addition, the invention describes novel ruthenium initiators and methods of making the same.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 22 OF 28 USPAT2 on STN

ACCESSION NUMBER: 2002:344691 USPAT2

TITLE: Selective ring-opening cross-metathesis of cycloolefins

INVENTOR(S): Morgan, John P., South Pasadena, CA, United States  
Morrill, Christie, Pasadena, CA, United States  
Grubbs, Robert H., South Pasadena, CA, United States  
Choi, Tae-Lim, Pasadena, CA, United States

PATENT ASSIGNEE(S): California Institute of Technology, Pasadena, CA,  
United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6803429	B2	20041012
APPLICATION INFO.:	US 2002-114674		20020401 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-280601P	20010330 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Harlan, Robert D.	
LEGAL REPRESENTATIVE:	Reed, Dianne E., Reed & Eberle LLP	
NUMBER OF CLAIMS:	26	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Figure(s); 2 Drawing Page(s)	
LINE COUNT:	1734	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A catalytic method is provided for a ring-opening cross-metathesis reaction between a cycloolefinic substrate and a second olefinic reactant, wherein the catalyst used is a transition metal alkylidene complex substituted with an N-heterocyclic carbene ligand. The substrates are selected so that the rate of the cross-metathesis reaction of the second olefinic reactant,  $k_{\text{sub.CM}}$ , is greater than or equal to the rate of the ring-opening metathesis reaction,  $k_{\text{sub.RO}}$ . In this way, the predominant ROCM product is a monomer, dimer, and/or oligomer, but not a polymer. The invention additionally provides for selective production of an end-differentiated olefinic product, using trisubstituted cycloolefins as substrates and/or a subsequent cross-metathesis reaction following an initial ROCM step. The cycloolefinic substrates include low-strain olefins such as cyclohexene as well as higher strain olefins such as cyclooctene.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 23 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:221180 CAPLUS

DOCUMENT NUMBER: 135:20055

TITLE: The study of ring opening metathesis polymerization kinetics for **endo** and **exo** **norbornene** derivative monomer with in-situ <sup>1</sup>H-NMR technique

AUTHOR(S): Fu, Qinghong; Seery, Thomas A. P.

CORPORATE SOURCE: Institute of Materials Science, University of Connecticut, Storrs, CT, USA

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2001), 42(1), 341-342  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB The ring opening metathesis polymerization kinetics, the different reactivity of

exo- and endo-isomers, and the temperature dependence of the reactivity of these

isomers when norbornene derivs. were polymerized under catalysts by in situ <sup>1</sup>H-NMR technique were described.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 24 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:504908 CAPLUS

DOCUMENT NUMBER: 133:193581

TITLE: Synthesis of substituted norbornenes and their polymerization to polynorbornenes with flexible aliphatic side-chains

AUTHOR(S): Abd-El-Aziz, Alaa S.; May, Leslie J.; Edel, Andrea L.

CORPORATE SOURCE: The University of Winnipeg, Winnipeg, MB, R3B 2E9, Can.

SOURCE: Macromolecular Rapid Communications (2000), 21(9), 598-602

CODEN: MRCOE3; ISSN: 1022-1336

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Synthesis and characterization of new thermally stable polynorbornenes functionalized with pendent flexible side-chains are reported. The flexible side-chains with terminal hydroxy groups were synthesized via SNAr reactions of cyclopentadienyliron-complexed chlorobenzenes with aliphatic diols. Condensation of these side-chains with **exo**,



**endo-5-norbornene-2-carboxylic acid** led to the formation of substituted monomers which were characterized using one- and two-dimensional NMR techniques. Ring-opening metathesis polymerization of these

monomers yielded polynorbornenes with pendent side-chains.

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 25 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:667768 CAPLUS

DOCUMENT NUMBER: 127:311473

TITLE: Functionalized polymer for use in dental adhesives

INVENTOR(S): Rheinberger, Volker; Moszner, Norbert; Stelzer, Franz; Schitter, Regina; Zeuner, Frank

PATENT ASSIGNEE(S): Ivoclar Ag, Liechtenstein

SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

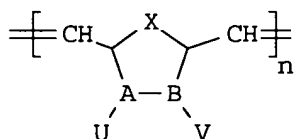
LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 796607	A2	19970924	EP 1997-250080	19970317
EP 796607	A3	19971210		
EP 796607	B1	20030212		
R: AT, CH, DE, FR, GB, IT, LI, SE				
DE 19616183	A1	19970925	DE 1996-19616183	19960412
DE 19616183	C2	19990512		
CA 2199567	AA	19970920	CA 1997-2199567	19970310
CA 2199567	C	20030114		
AT 232377	E	20030215	AT 1997-250080	19970317
JP 10030018	A2	19980203	JP 1997-65063	19970318
JP 3106111	B2	20001106		
US 2002143118	A1	20021003	US 1999-377977	19990820
US 6479592	B2	20021112		
PRIORITY APPLN. INFO.:			DE 1996-19613017	A 19960320
			DE 1996-19616183	A 19960412
			US 1997-819504	B1 19970317

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AB Ring-containing polymers I [X = CH<sub>2</sub>, O; AB = CHCH, C:C; U = CO<sub>2</sub>H, CO<sub>2</sub>R<sub>3</sub>, YP; Y = CH<sub>2</sub>O, C(O)O, C(O)OR<sub>1</sub>O; P = CH<sub>2</sub>:CHC(O), CH<sub>2</sub>:CMeC(O), CH<sub>2</sub>:CHCH<sub>2</sub>, CH<sub>2</sub>:CHC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>; V = H, CO<sub>2</sub>H, CH<sub>2</sub>OH, R<sub>3</sub>, OR<sub>2</sub>, C(O)OR<sub>2</sub>; or UV = C(O)TC(O); T = O, NH, NR<sub>3</sub>; R<sub>1</sub> = (substituted) C1-5 alkylene or oxyalkylene; R<sub>2</sub> = (substituted) C1-12 alkyl; R<sub>3</sub> = R<sub>2</sub>, C<sub>6</sub>-14 aryl], prepared by ring-opening radical polymerization of unsatd. bicyclo[2.2.1] compds. at room temperature, adhere

strongly to a variety of substrates, form cements when combined with reactive fillers, and are useful as components of coatings, cements, adhesives, and composites especially for dental use. Thus, 5-norbornene-2,3-endo/exo-dicarboxylic acid underwent addition to 3,4-dihydro-2H-pyran in the presence of pyridinium tosylate to form

bis(tetrahydropyran-2-yl) 5-**norbornene**-2,3-**endo**/**exo**-dicarboxylate (II). II underwent metathetic **ring-opening** polymerization with 5-**norbornene**-2-**endo**/**exo**-Me methacrylate (preparation given) in the presence of catalytic amts. of the Mo carbene complex III (preparation given), followed by cleavage of the tetrahydropyranyl groups with p-toluenesulfonic acid, to form a copolymer of I (X = CH<sub>2</sub>, AB = CHCH, U = V = CO<sub>2</sub>H) and I (X = CH<sub>2</sub>, AB = CHCH, U = CH<sub>2</sub>:CMeC(O)OCH<sub>2</sub>, V = H). A dental adhesive containing this copolymer 18.0, deionized water 32.4, 2-hydroxyethyl methacrylate 44.2, maleic acid 3.0, camphorquinone 0.3, hydroquinone mono-Me ether 0.1, NH<sub>4</sub>F 1.0, and diphenyliodonium hexafluorophosphate 1.0 weight% was applied to the dentin surface of extracted teeth, photopolymd., and coated with a com. filling composite (Compoglass) which was also photopolymd. The shear strength of the resulting composite structure was 15.6 MPa.

L4 ANSWER 26 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1993:626718 CAPLUS  
DOCUMENT NUMBER: 119:226718  
TITLE: Preparation of **norbornene** dicarboximide polymers from **endo** and **exo** isomer monomers  
INVENTOR(S): Asrar, Jawed  
PATENT ASSIGNEE(S): Monsanto Co., USA  
SOURCE: U.S., 6 pp. Division of U.S. Ser. No. 196,992, abandoned.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5219966	A	19930615	US 1991-706480	19910528
PRIORITY APPLN. INFO.:			US 1988-196992	B3 19880520

AB Endo and exo isomer mixts. of N-Me norbornene dicarboximide are polymerized using ring-opening catalysts to give polymers with glass temperature  $\geq 210^\circ$ .

L4 ANSWER 27 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1991:472292 CAPLUS  
DOCUMENT NUMBER: 115:72292  
TITLE: Homopolymerization of cyclic olefins by a molybdenum olefin metathesis catalyst  
AUTHOR(S): Johnston, Jay A.; Farona, Michael F.  
CORPORATE SOURCE: Dep. Chem., Univ. Akron, Akron, OH, 44325-3601, USA  
SOURCE: Polymer Bulletin (Berlin, Germany) (1991), 25(6), 625-7  
CODEN: POBUDR; ISSN: 0170-0839  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Cyclopentene, **norbornene**, **exo**- and **endo**-dicyclopentadiene, **exo**, **exo**-norbornadiene dimer, and indene were homopolymd. in presence of Mo(CO)5py-EtAlCl<sub>2</sub>-Bu<sub>4</sub>NCl. In most cases, the polymers obtained were of the ring-opened type, but also showed ring-retention to varying degrees, depending on the temperature of polymerization  
Generally, ring-opening polymerization was favored at lower temps. The dicyclopentadiene monomers gave crosslinked materials, showing reaction through both double bonds.

L4 ANSWER 28 OF 28 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1968:114981 CAPLUS

DOCUMENT NUMBER: 68:114981  
TITLE: **Ring-opening** polymerization of **norbornene** and its derivatives by molybdenum pentachloride, tungsten hexachloride, and rhenium pentachloride catalysts  
AUTHOR(S): Oshika, Takao; Tabuchi, Hiroyoshi  
CORPORATE SOURCE: Toa Nenryo Kogyo Co., Saitama, Japan  
SOURCE: Bulletin of the Chemical Society of Japan (1968), 41(1), 211-17  
CODEN: BCSJA8; ISSN: 0009-2673  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Norbornene and its derivatives such as *exo*-5, 6-trimethylenenorbornene (*exo*-TMN) and *endo*-dicyclopentadiene (*endo*-DCPD) have been polymerized via ring cleavage to high-mol.-weight polymers soluble in aromatics by use of MoCl<sub>5</sub>, WCl<sub>6</sub>, and ReCl<sub>5</sub> catalysts in CCl<sub>4</sub>. The ring-opening polymers obtained with MoCl<sub>5</sub> have a *trans* structure almost exclusively; on the other hand, the polymers obtained with ReCl<sub>5</sub> are rich in *cis* structures and those obtained by WCl<sub>6</sub> are mixts. of the 2. The reactivities of the monomers on those catalysts have been found to have the order of decreasing reactivity: *exo*-TMN > **norbornene** > *endo*-DCPD. In the **ring-opening** polymerization of **norbornene** by MoCl<sub>5</sub>, CS<sub>2</sub> and CCl<sub>4</sub> are effective solvents. The yield increases with a rise in temperature and also upon addition of a catalytic amount of tertiary amines during the polymerization procedure, while the structures of the polymers obtained do not change. The co catalyst H<sub>2</sub>O is not necessary. Cl atoms are found in the polymers. These results suggest that the **ring-opening** polymerization of **norbornene** over MoCl<sub>5</sub> occurs by a specific coordinated mechanism.